

A1 --An electronics packaging system(1) including a printer(3), a placing unit(4) and a reflow unit(5), wherein a printed wiring board(2) is carried while being kept in an upright position. The printed wiring board(2) has solder printed on all the lands thereof at the same time, the electronic parts(10) are all placed on the lands at the same time, and the electronic parts(10) are all soldered to the lands at the same time. Thus, the system(1) can be designed more compact, and the electronic parts packaged in a shorter time.--

IN THE CLAIMS

Claims 1-17 remain in the application and claims 1-8 and 10-15 have been amended hereby.

--1. (Amended) An electronics packaging system comprising:

a printer to print solder on lands of a printed wiring board;

A2 a placing unit to place electronic parts on the lands of the printed wiring board having the solder printed thereon by the printer; and

a reflow unit to heat the printed wiring board on which the electronic parts have been placed by the placing unit and to solder the electronic parts to the printed wiring board,

the printed wiring board being brought by a transfer mechanism, while being held in generally upright position, in order through the printer, the placing unit and the reflow unit.

--2. (Amended) The system according to claim 1, wherein:
land-position information is generated by a detecting mechanism provided in the printer before the solder is printed by the printer on the lands of the printed wiring board; and
the placing unit places the electronic parts on the printed wiring board based on the land-position information.

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--3. (Amended) An electronic-part placing unit comprising:
a transfer mechanism for carrying a printed wiring board while keeping the printed wiring board in an upright position;
a part holding mechanisms for holding, by suction, an electronic part supplied from a part feeder;
a turning mechanisms for shuttling the part holding mechanism between a first position in which the electronic part supplied from the part feeder is held by suction and a second position where the electronic part is opposite to the printed wiring board supported by the transfer mechanism; and
a guide mechanism including first and second guide members for guiding an up-down movement of the part holding mechanism in the second position, wherein

when the part holding mechanism is elevated to the second guide member, the second guide member is moved to the printed wiring board held by the transfer mechanism and the part holding mechanism places the electronic part on the printed wiring board.

--4. (Amended) The electronic-part placing unit according to claim 3, wherein

the turning mechanism includes a rack disposed along a direction in which the part holding mechanism is moved up and down and a gear provided integrally with the part holding mechanism and engaged with the rack; and

as the part holding mechanisms is moved up and down, the gear in mesh with the rack is rotated to shuttle the part holding mechanism between the first and second positions.

--5. (Amended) The electronic-part placing unit according to claim 3, wherein

B2 there is provided in a position opposite to the part holding mechanism in the second position a detector to detect a held state of the electronic part held by the part holding mechanism, the part holding mechanism including an adjusting mechanism rotatable about a direct perpendicular to the direction in which the part holding mechanism is moved up and down to adjust the held state of the electronic part.

--6. (Amended) The electronic-part placing unit according to claim 3, wherein the transfer mechanism is positioned by engagement with a positioning unit provided on a base plate.

--7. (Amended) The electronic-part placing unit according to claim 6, further comprising placing means for placing an electronic part in a position downstream of the transfer mechanism and for placing an electronic part in a position contiguous to the downstream position and upstream of the

transfer mechanisms.

--8. (Amended) A printer comprising:

a transfer mechanism for carrying a printed wiring board while keeping the printed wiring board an upright position;

a pair of screen mechanisms each including a screen disposed opposite to the printed wiring board supported by the transfer mechanism and each being movable towards and away from the printed wiring board;

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could a squeegee mechanism disposed correspondingly to each of said pair of screen mechanisms to be slid by the screen of each of said pair of screen mechanisms and to squeeze ink to the printed wiring board as the screen is moved towards the printed wiring board; and

a driving mechanism for moving the pair of screen mechanisms so as to slide the squeegee mechanism.

--10. (Amended) The printer according to claim 8, wherein the driving mechanism includes:

a drive motor;

A3 a driving force transmission to transmit the force from the drive motor; and

a moving member to move the squeegee mechanism by means of the force from the drive motor.

--11. (Amended) The printer according to claim 8, wherein: the transfer mechanism includes a pair of guide rails to

support the printed wiring board at edges thereof and being arranged parallel to a direction in which the printed wiring board is carried;

each of the guide rails includes a pair of engaging and supporting plates disposed opposite to each other to support, by engagement, the edges of the printed wiring board; and

each of the engaging and supporting plates has a thickness, whereby each of the engaging and supporting plates with which it is deflected into close contact with the printed wiring board when the screen is pressed by the squeegee mechanism.

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--12. (Amended) The printer according to claim 8, wherein there is provided near an end of the squeegee mechanism an auxiliary arm to roll the ink when the squeegee mechanism makes the screen slide.

--13. (Amended) The printer according to claim 8, further including a detector to detect a position detection mark provided on the printed wiring board and to detect a posture of the printed wiring board supported on the pair of guide rails.

--14. (Amended) The printer according to claim 13, further including an adjusting mechanism to correct the posture of the printed wiring board supported on the pair of guide rails.

--15. (Amended) A reflow unit comprising:

a transfer mechanism for carrying a printed wiring board

having cream solder printed wiring board having a cream solder printed on lands thereof while keeping the printed wiring board in an upright position;

a reflow furnace for heating the printed wiring board supported by the transfer mechanism and formatting the cream solder printed on the lands;

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a first heating mechanism provided in the reflow furnace arranged to face on main side of the printed wiring board supported by the transfer mechanism;

a second heating mechanism provided in the reflow furnace arranged to face an other main side of the printed wiring board supported by the transfer mechanism; and

a third heating mechanism provided in the reflow furnace for heating from below, the printed wiring board supported by the transfer mechanism.

REMARKS

Claims 1-17 remain in the application and claims 1-8 and 10-15 have been amended hereby.

As will be noted from the Declaration, Applicants are citizens and residents of Japan and this application originated there.

Accordingly, the amendments to the specification are made to place the application in idiomatic English, and the abstract and claims are amended to place them in better condition for examination.